

621.32

Waterhouse



—THE—  
WATERHOUSE\*SYSTEM  
—OF—  
Arc and Incandescent

**LIGHTING**

MANUFACTURED BY

The Waterhouse Electric & Mfg. Co.,  
HARTFORD, CONN.

FACTORY, COLT'S WEST ARMORY.

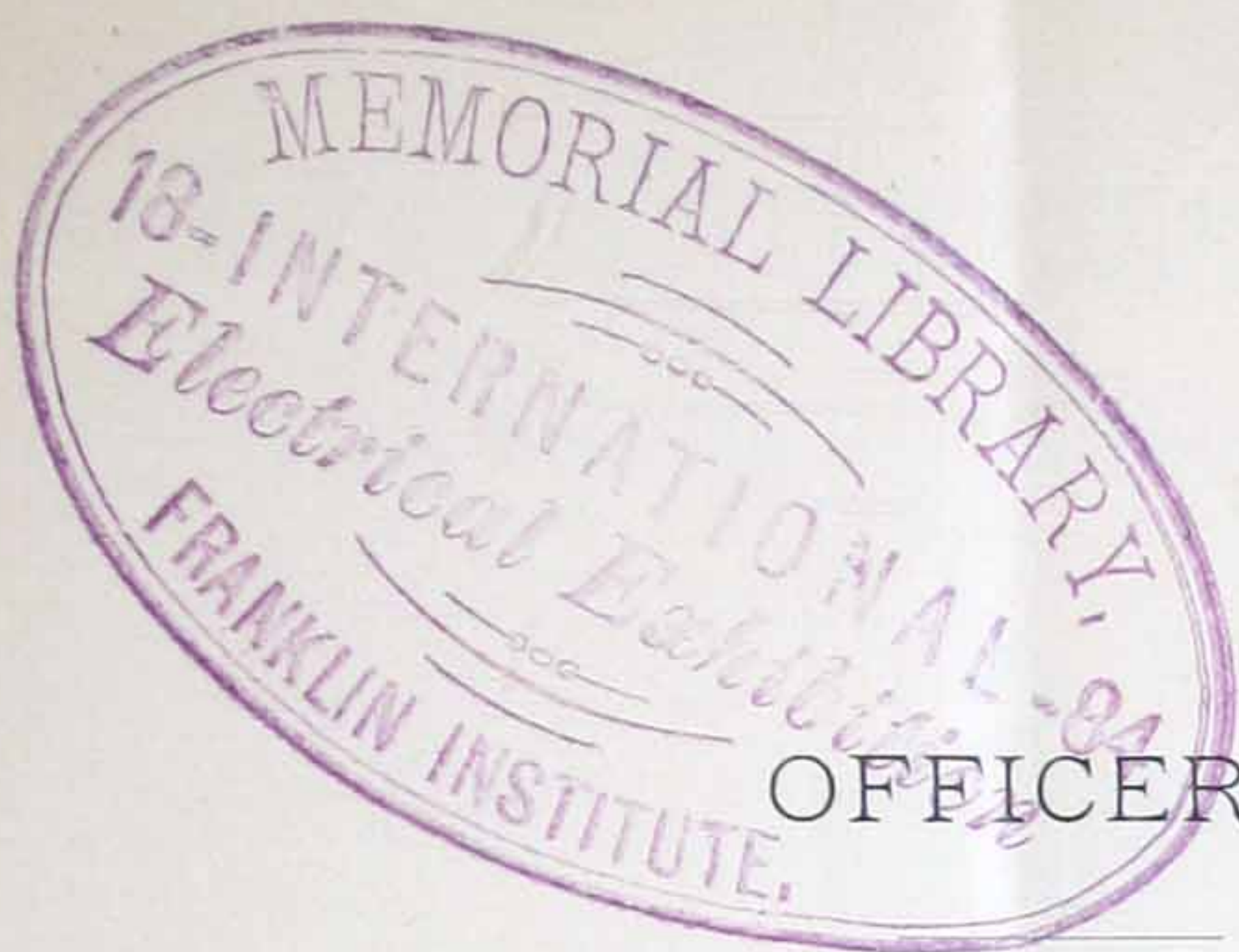
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Pamphlet #3









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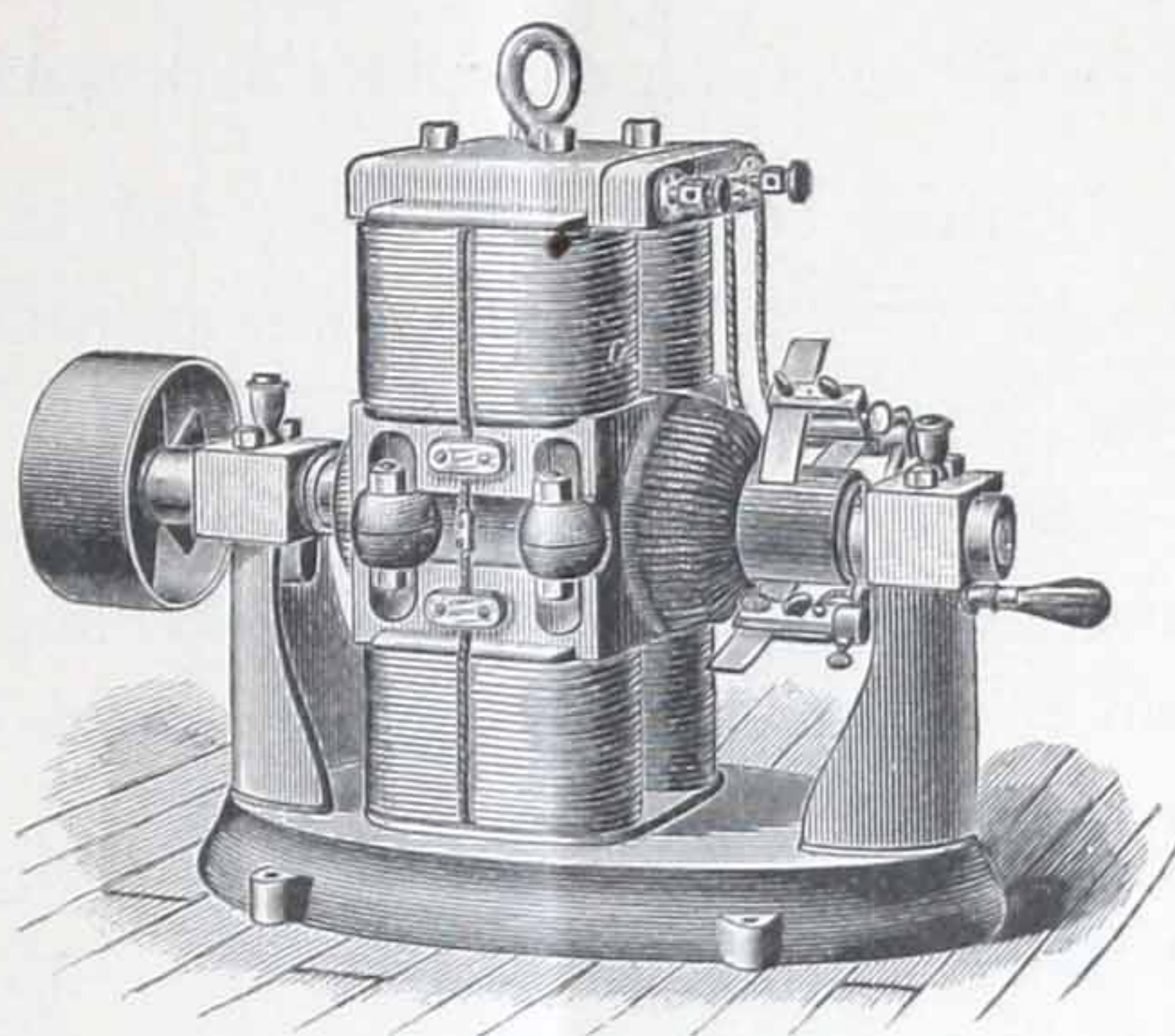






# THE WATERHOUSE SYSTEM

Of Arc Lighting is of Acknowledged Superiority.



Six Light (2,000 C. P.) Dynamo.

The tests of power required demonstrate the economy, and the light produced has received, owing to its remarkable steadiness, strong endorsement.

Mr. Waterhouse has not accidentally invented our system, but it is the result of long experience and skill.

The Dynamo is of the closed circuit type, with new improvements.

The Regulator forms a new method of regulation whereby the current cannot build up and destroy the machine.

The Arc lamp is a distinct invention even to its magnetic principle, and produces a light that will compete successfully with any arc light in the world.

No System combines such perfection in all of its important features.

We refer to the letters of recommendation printed herewith, and invite purchasers to see one or more of our plants and judge of the merits of the system.

It is constantly given favorable notice from all sides, but we particularly value the opinion received from experts and those well posted in the science. There is but one verdict: "*It is the best system we have seen, and contains many new and original ideas.*"



## THE DYNAMO ELECTRIC MACHINE.

The Waterhouse Dynamo is compact in form, has long bearings for the armature shaft, and we do not hesitate to say it is the smoothest running arc light dynamo yet produced. It is of the closed circuit type, but with new improvements, and its efficiency over the open circuit machines is great.

The Waterhouse Dynamo contains less wire, and in consequence less resistance than the older systems, and with perfect regulation, attains a great efficiency and saving of power. Long sparks on the commutator are a decided objection, as they take power and wear the segments. It is a great improvement to remove these destructive sparks, including the air blast spark controller and stream of oil, required on the commutators of the old systems.

The dynamos are run at a speed to insure long service, it being the object to have them as durable as lathes and planers.

The old systems secured their record for saving power when they reduced the power required for a full arc light from one and one-quarter, to one horse power, and came in with half arcs at seven-tenths of a horse power. But the glory of that achievement has passed. A new day has dawned, and where are the old systems? Producing the same generators, the same big sparks, using the same quantity of wire on the dynamo, and taking no less power.

We predict a new era in electric lighting, and the Waterhouse system leads.

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### TEST OF POWER.

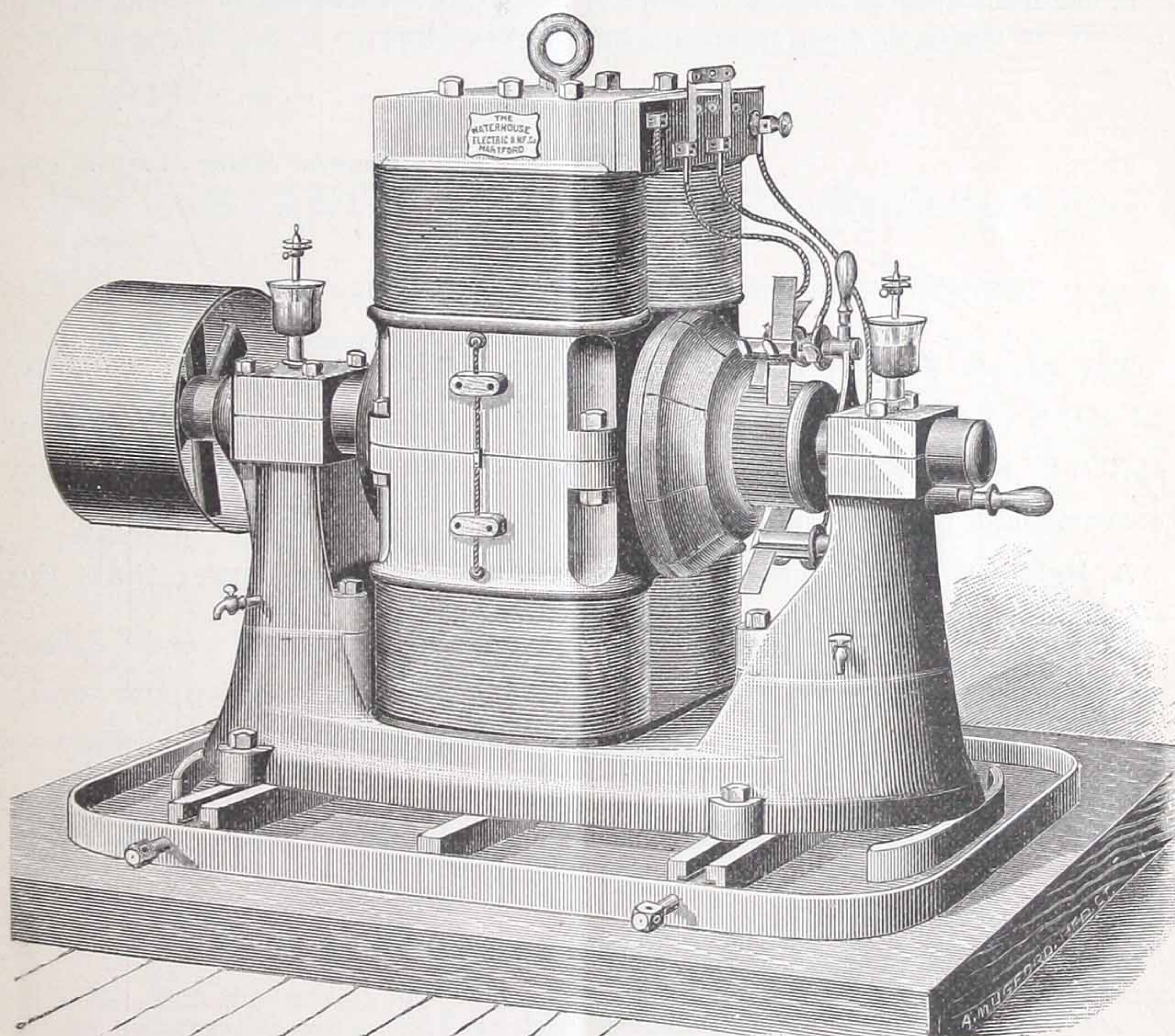
BOSTON, MASS., August 27, 1886.

THE WATERHOUSE ELECTRIC AND MFG. CO., Hartford, Conn.:

*Dear Sirs:*—In compliance with your request to make an accurate and reliable test of the horse power required to operate the Waterhouse System of Electric Arc Lighting, I have to submit the following report:

The plant tested was at the local electric light station in Hartford, and comprised two Waterhouse dynamos in series running forty-six three-quarter arcs on a seven mile circuit, and driven by an Armington & Sims engine of nine and one-half inches diameter of cylinder by twelve inch stroke, running two hundred and eighty-four revolutions per minute.





No. 3 Dynamo.



The instruments employed for making the tests were a pair of Thompson steam engine indicators, using the pantograph for the reducing motion.

The first test was made to determine the amount of power consumed in friction of engine and dynamos without brushes or commutators, and which resulted in 4.88 H. P.

Diagrams were then taken every five minutes for one hour, with full load on, all lights in circuit, and the total result averaged 31.50 H. P. developed.

Deducting the 4.88 H. P. friction leaves 26.62 H. P. required to operate the forty-six lights, being nearly .58 H. P. per light.

The engine with this number of lights has too *light a load* for economy, a mean effective pressure of only 26.18 pounds being realized, while with same boiler pressure cutting off at *one-quarter* stroke the mean effective pressure would be 47 pounds.

In our opinion *nearly double the number of these lights* could be run by this engine with a slight decrease in the power required per light. Yours truly,

C. H. ATKINS,

*With Knowles Steam Pump Works.*

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The above Engine is sent out to operate Dynamos for 50 ARC LIGHTS of other systems, but will operate Dynamos for 90 WATERHOUSE NOMINAL 1,700 C. P. LIGHTS (8.5 Ampere) at its most economical point of cut-off.

A light one-third larger and requiring no more power than the Standard half arc lights of other systems.

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## ENDORSEMENT OF THE HARTFORD ELECTRIC LIGHT COMPANY.

HARTFORD, NOVEMBER 2, 1886.

THE WATERHOUSE ELECTRIC & MFG. CO.:

*Gentlemen:*—The plant of your arc lights, which has been on trial at our station for the past three months, has performed its work to our *entire* satisfaction. The lamps have burnt on our regular runs without stopping; the light produced has been *remarkably* steady, and the regulation of the dynamo excellent. As regards the distance that your lights penetrate we have made many comparisons, and find it nearly up to our 2,000 C. P. lights (10 amperes), although your current measures but  $8\frac{1}{2}$  amperes. The test of power required made by Mr. Atkins we believe to be correct and reliable, so that comments are unnecessary as to the economy of the Waterhouse System. Yours truly,

THE HARTFORD ELECTRIC LIGHT COMPANY,

A. C. DUNHAM, *President.*



## COMPARISON.

An "8½ ampere light" "nearly up to" their "2,000 C. P. Lights" (10 amperes), and taking no more power than their half arcs. The engine had been running three years without repair, and was not overhauled for the occasion. The circuit was seven miles in length, which corresponds in resistance to *three arc lamps*, and the two dynamos were running in *series*, so that the friction included two machines. It will at once be seen that the odds were decidedly against us, so that in regular service the test of power can be relied upon.

A smooth, elegant running dynamo outside and saving power inside, with perfect regulation, is what we offer in Dynamo Electric Machines.

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## INSTANTANEOUS AUTOMATIC REGULATION

is a feature in arc lighting heretofore unattained. Its advantage is great over regulators depending upon slow moving brushes which are actuated by complicated mechanism necessarily to be kept scrupulously clean. They have been considered good regulators, but in a crisis the lightning rapidity of the Waterhouse Regulator is necessary to insure the life of the machine. The old regulators add to the care and complication of the machine, and in case of any accident or imperfect operation of the means of shifting the brushes, it leaves the machine in a condition to produce injurious effects not only on the lamps but to the machine itself; and again, where regulation depends upon a mechanical movement, as such movement takes an appreciable time to accomplish regulation, the destructive effect of any considerable change in the intensity of the current would be accomplished before the remedy could be effected.

In regulating by the Waterhouse method, the brushes do not change position, and the advantage we have is, in the machine being self-regulating within itself, and in a condition to regulate instantly.

We were given an opportunity to test the accuracy of the regulator on an Otto Gas Engine. The test is very important, for it substantiates our claim that when a light is cut out the power required is reduced, for as each light was cut down to a complete short circuit of the machine, the amount of gas consumed was proportionately lessened.

No dynamo yet produced can show such perfect automatic regulation and saving of power.



# TEST ON THE OTTO GAS ENGINE.

OFFICE SCHLEICHER, SCHUMM & CO.,

*Engineers and Builders of*

THE OTTO GAS ENGINE,

33d and Walnut Streets,

PHILADELPHIA, October 2, 1886.

THE WATERHOUSE ELECTRIC AND MFG. CO.:

*Gentlemen:*—We have made a test at our works of your eight light dynamo, and are glad to say that we succeeded in running the eight full arc lights with 5.18 actual H. P. They were as *clear and steady as any one might wish*. When running the eight lights the engine (which was a seven indicated horse power) had ample power to spare, and consumed no more than 132 cubic feet of gas per hour. The consumption of gas came down to 102 cubic feet when four lights were cut out. The machine was then short circuited without sparks or injury to the machine, the expense of gas coming down to 42 feet per hour. We *have never before* succeeded in running more than *five* full arc lights on any of the *many* dynamos of other makes tested at our works, with the same size Gas Engine, and will add that we have not seen a machine built with as much care in the details, and of as good workmanship in general, as yours. We append figures of test.

Very truly yours,

SCHLEICHER, SCHUMM & CO.

NUMBER OF LIGHTS.	Eight.	Seven.	Six.	Five.	Four.	Machine in Short Circuit No. Lights.	Engine alone.
Gas consumed per minute, . . . .	2.2	2.1	2.	1.9	1.7	0.71	0.58
Revolutions of Engine per minute, .	180	180	180	180	180	184	184
Revolutions of Dynamo per minute,	1300	1300	1300	1300	1300	1320	1320
Slip of Belt, . . . . .	10 per ct.	10 per ct.	10 per ct.	10 per ct.	10 per ct.	10 per ct.	
Actual H. P., including Friction, . .	5.18				3.58		
Gas taken per hour, in Cubic Feet, .	132	126	120	114	102	42.6	34.8

During those tests the lights were full arc and steady throughout.

SCHLEICHER, SCHUMM & CO.

The only System that can, in practice, claim a successful combination with the Gas Companies.

It has been claimed that in regulating we run the current on to a resistance that equals the amount cut out of the lamp circuit, and in consequence do not save power, which is not true.





Waterhouse Double Lamp.



## ARC LAMPS.

An arc light that does not require fine adjustment has its advantages. Its reliability is lasting ; it does not require an expert's care, and its wide range of adjustment will admit of a steady light being produced when the lamps of fine adjustment would be entirely out of order.

The Waterhouse Arc Lamps differ from all others, and have many advantages over other lamps. They are a distinct invention, and covered by patents with broad claims, the magnetic principle being entirely new.

All our lamps contain the same form of regulating magnet. But we have several designs of lamps varying in the mechanism through which regulation is imparted to the carbons. We have a

### CLUTCH LAMP,

extremely simple in construction, few in parts, durable and easy to adjust or repair. Also, a

### RACK FEED LAMP,

having the merits of great simplicity, durability, and an extremely fine and sensitive feed motion. Also, a

### DOUBLE LAMP,

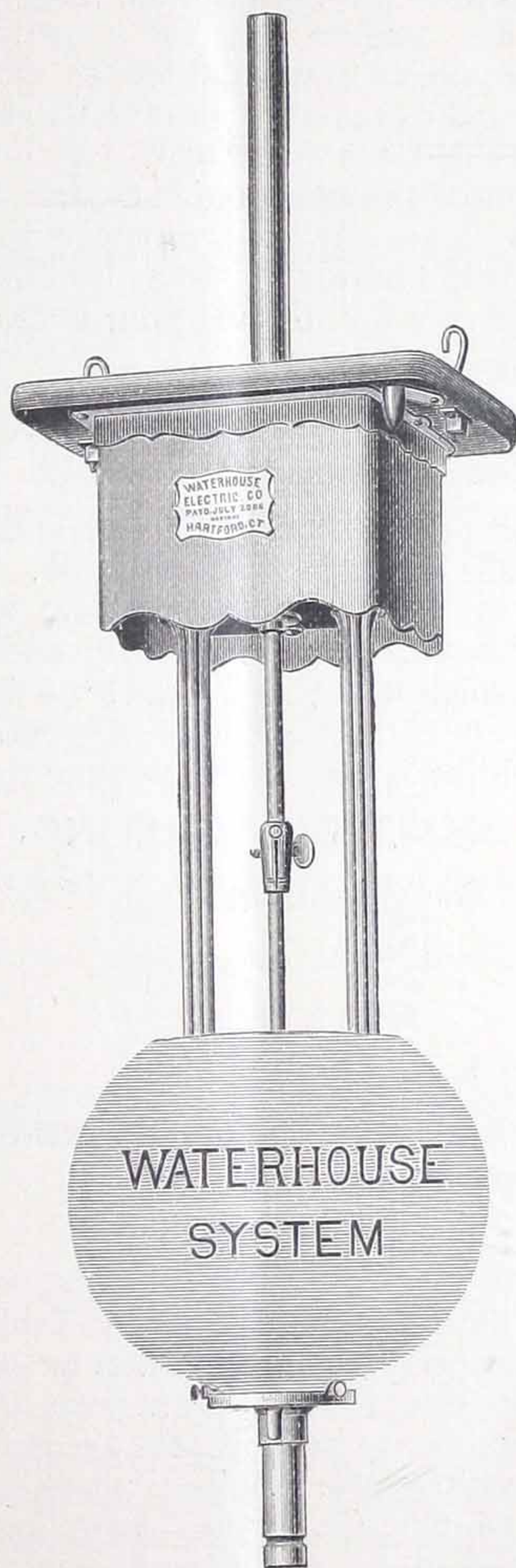
of the Rack Feed type, which has all the points required for all night lighting, and as a lamp we believe it to be every way superior to any kind in the market.

All our lamps have the advantage of being free from any glycerine or liquid dash pots. They are all provided with reliable automatic cut-out mechanism, hand switches, and all the conveniences for easy trimming, besides having the merit of first-class workmanship and good material.

The Waterhouse lamp magnet is an iron core, quadrangular in shape, and has the main and shunt circuit coils arranged at an angle from each other. The magnetic effect on the iron core, produced by the currents flowing through these circuits, is the novelty of the invention, and new in its application.

The armature is so susceptible to the changes in the magnetism that the feeding of the carbon is the finest—not sudden, but gradual, thereby keeping the carbons in nearly a relative position. The simplicity of the mechanism and reliability of its action commends the lamp, for it is not burdened by complicated machinery so common in arc lamps.





Waterhouse Single Lamp.



## FACTORY LIGHTING.

Few manufacturers are aware of the economy of electric lighting.

The effect with arc lights is a large volume of light which fills all parts of the building, and it is a fact that a good light results in increased production. Such improvements have been made in arc lighting that the Waterhouse arc lights are entirely adapted for factory lighting.

We recommend our  $8\frac{1}{2}$  ampere light for a special factory light, but can furnish any size. It requires for thirty-three of our  $8\frac{1}{2}$  ampere lights, 20 H. P., including friction of dynamo. These thirty-three lights will illuminate 33,000 sq. ft. so brightly that the finest work can be done; but where such brilliant light is not required throughout the factory, the plant will illuminate much more space. The lights can be so arranged that the shadows will be overcome. Two carbons will burn eight hours, and carbons cost about \$12.00 per thousand. The cost then for an eight hour run would be—

80 lbs. coal per hour, or 640 lbs. coal, -	-	-	-	\$1.60
66 carbons, @ \$12.00 per thousand, -	-	-	-	.79
$1\frac{1}{2}$ hours trimming lamps, @ 20 cts., -	-	-	-	.30
Total cost for eight hours, -				\$2.69 or .33 $\frac{5}{8}$ cts. per hour.

Thirty-three lamps for 33 $\frac{5}{8}$  cts. per hour, or one lamp for one cent and a fraction per hour. This is the bulk of the expense.

As the plant requires no extra engineer, we have not included expense of his time. The cost of repairs would be small, and as the oil is collected and strained it makes a small item; so we can state that it costs to maintain an arc light of  $8\frac{1}{2}$  ampere current one hour, *less than two cents*.

If the average for lighting is 300 hours per year, the following would be the

### COST OF LIGHTING.

33 Arc Lights, illuminating	33,000 square feet, 66 cts. per hour, \$198.00 per year.
20 " " "	20,000 " " 40 " " " 120.00 "
12 " " "	12,000 " " 24 " " " 72.00 "
10 " " "	10,000 " " 20 " " " 60.00 "
6 " " "	6,000 " " 12 " " " 36.00 "
4 " " "	4,000 " " 8 " " " 24.00 "

The saving is, Reduction in cost of insurance; increased production; saving as compared to gas. If all points are considered, you will find the saving a large percentage on cost of plant.

### COMPARISON.

Twelve times the light is produced in arc lighting with same power required for incandescent. We have a first-class incandescent system which we thoroughly believe is the best on the market, so that we are ready to deliver either system. The question of power is decidedly in favor of the arc light. The great volume of light costs no more to maintain the gas light effect of the incandescent and is much more satisfactory. In large plants incandescent wiring is expensive, power also, so that we advise where incandescent is absolutely necessary the combination of arc and incandescent, but for factory lighting not on same machine. It may be that you know that the arc light will not suit your business, you are sure of it, yet you might be mistaken. A customer gave us the privilege to show our arc light in his mill. Before the apparatus arrived he was sure he must have the incandescent, but gave our man the privilege to show up. The Waterhouse Factory Light was so steady and adapted for the finest work that we booked the order for a 70 arc light plant.



## PROFITS ACCRUE FROM A SAVING OF POWER.

### THE COMPETITION IN NEWARK, N. J.,

showing the effect when in competition with other systems. A very important fact in any business is to have the best.

NEWARK SCHUYLER ELECTRIC LIGHT CO.,

NEWARK, N. J., March 23, 1887.

WATERHOUSE ELECTRIC AND MFG. CO., Hartford, Conn.:

*Gentlemen:*—The Waterhouse system has been in operation in our station for the past two and one-half months, and we are pleased to say, it has given both our company and our customers entire satisfaction. We doubt if the light produced is equalled in color or steadiness by any other system.

We consider your three-quarter ( $\frac{3}{4}$ ) arc fully as strong as the so-called 2,000 candle power lights, owned by other parties with whom we are competing, and we are daily substituting in place of the said 2,000 candle power lamps, our three-quarter arcs with perfect satisfaction to our customers. We have thus placed 96 lamps during the past 60 days, and have orders for enough to tax our capacity, which, however, we expect to increase.

Your regulator we consider deserves especial mention; it works so quick and perfect, immediately reducing the power consumed in proportion to the lights turned off.

Your workmanship and material, so far as we can judge, are of the best, and we are pleased to say your claims and representations, when negotiating with us, have now been fully demonstrated.

Yours truly,

F. B. MANDEVILLE, Vice-Pres't and Treasurer.

NOTE.—Since the above date 100 arc lights have been added to this plant.

### THE BEST LIGHT IN CONNECTICUT.

WILLIMANTIC ELECTRIC LIGHT CO.,

WILLIMANTIC, CONN., March 7, 1887.

WATERHOUSE ELECTRIC AND MFG. CO., Hartford, Conn.:

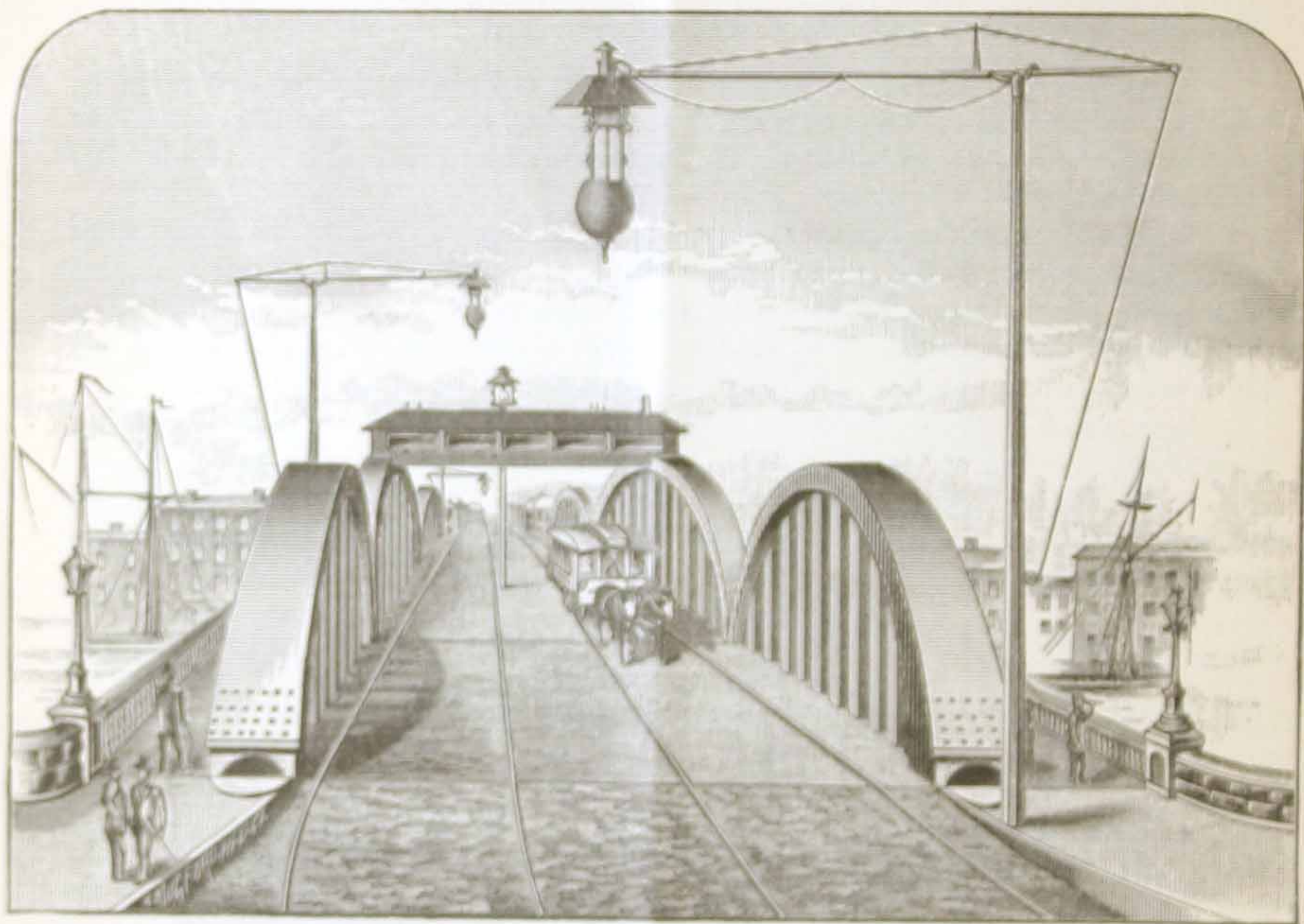
*Gentlemen:*—I want to say a word in favor of the Waterhouse system of Electric Lighting.

Before we decided on your light, I gave the matter very thorough inspection and examined half a dozen or more different plants using as many different systems. Your regulator and the power required induced us to give your light the preference, and we have found it as recommended to us, and all that was claimed for it. As you know, we are using a divided arc, but our lamps we believe, and are told by others, are fully equal to a full arc of any other system, and we think and fully believe we have the best light in the State of Connecticut, and should be pleased to show it to any parties contemplating putting in a plant.

Yours truly,

H. F. ROYCE, Sec'y.





THIRD AVENUE BRIDGE, HARLEM RIVER, NEW YORK CITY,

Showing Waterhouse Lamps hung from Brady Mast Arm. By a novel arrangement the draw can be opened and closed in either direction and the lamps remain burning.



## SIZE OF LIGHTS.

We manufacture lamps for three sizes of lights that will compete successfully with any lights now in use for size, color, and steadiness :

Nominal 2,000 C. P., 10 Ampere and 45 Volts.

“ 1,700 “  $8\frac{1}{2}$  “ “ “ “

“ 1,200 “ 7 “ “ “ “

The 2,000 candle power lamps are recommended for street lighting, especially where there is competition or a liability of it.

The 1,700 candle power lamps are recommended for street lighting where the plant is small, say 50 lights or less, for they can be used for commercial lighting as well. It is the same light furnished by most systems as a 2,000 C. P. light, and takes in the Waterhouse system the power of a half arc light of other well-known systems and is one-third larger.

The 1,200 candle power lamps are entirely adapted for commercial and mill lighting, being very economical in power, and less in price than the 2,000 or 1,700 C. P. lights, admitting of a more extended use.

## FACTORY LIGHTING.

OFFICE OF CHURCH & CO.,

129 Pearl Street, NEW YORK, May 10, 1887.

THE WATERHOUSE ELECTRIC AND MFG. CO.:

*Gentlemen:*—The record of the gentlemen connected with your company for the production of first-class machinery led us to suppose that the workmanship of your apparatus from a mechanical point of view, would be all that could be desired. Upon investigation we learned that the plants installed were giving entire satisfaction. The Harlem Lighting Company speak in the highest terms of your system, and certainly the wonderful steady light produced from their station warrants the endorsement.

On this information we ordered a plant for our factory, and would say that you have fulfilled our expectations. The dynamo is the smoothest and stillest running machine we have seen, and the workmanship is indeed first-class. The regulator performs its work, for we have run ten lights on our thirty-five light machine without an over-production of current, and with the machine perfectly cool. But the exhibition made on starting the plant was as fine a test of automatic regulation as we ever expect to witness. With all of our lamps burning, the machine was connected at the binding posts, instantly cutting out all of the lamps and placing the machine in short circuit, and the machine was run in short circuit until signification was made that we were satisfied.

In fact, your representations of regulation, power required, and steady light, we think are well sustained. The light is perfectly adapted for inside illumination.

We congratulate ourselves in securing such a fine system of electric lighting, for it is indeed a puzzle, amid all of the stalwart claims of the various systems, to select the best.

Yours truly,

CHURCH & CO.



## CAREFUL INVESTIGATION.

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A leading dry good house in New York City after the most careful investigation (covering several months), selected the Waterhouse System on its merits.

JAMES A. HEARN & SON,

24, 26, and 30 West 14th St.,

25, 27, and 29 West 13th St.,

NEW YORK, August 15, 1887.

WATERHOUSE ELECTRIC AND MANUFACTURING CO., Hartford, Conn.,

*Gentlemen:*—Having thoroughly tested our Electric plant, we desire to express our satisfaction and at the same time give our experience, which you are at liberty to communicate to any who may contemplate putting in an arc system.

We have for some years had arc lights in Basement and Main floor of our store, being supplied by the "Brush" and "United States" Electric Lighting Companies. Recent additions to our buildings compelling increase of number of lights to forty-one, we determined to put in an independent plant.

Desiring the best system, we had an expert investigation made in our behalf, embracing nearly all the present arc systems, in which investigation many of the principal plants and factories in the city and near by were visited.

Choice finally rested between three; with all the facts before us we unhesitatingly decided upon yours.

We found the dynamos well built, smooth running, with less sparks at commutator and requiring less power than any other.

The lamps simple and easily adjustable.

The light clear, white, and steady.

The regulator (tested in every way, including cutting out of all lights by short circuiting machine at binding posts) is the surest, quickest, and best.

Notwithstanding difficulties in overcoming excessive heat in our engine room, the plant is working satisfactorily. We believe it is the best of existing arc systems.

Calculation based on present use of lights show that we will more than save entire cost of plant within three years.

Having found you able to make good all promises and representations, and ready to fulfill not only the letter but the spirit of your contract, we are more than pleased that we decided to adopt the Waterhouse system, being that which undoubtedly best represents the advance in Electric lighting.

Yours truly,

JAMES A. HEARN & SON.



## THE WATERHOUSE INCANDESCENT SYSTEM.

After careful experiments, aided by years of experience, we are now prepared to furnish a system of incandescent lighting that is most economical and complete.

The efficiency of the Waterhouse Dynamos, and the superiority of their regulation extends not only to our arc system but also to the incandescent.

The perfection of the method of regulation is such that all of the lights, or all but one, can be turned off from the dynamo instantaneously, and that one will burn at standard.

Stronger claims are made by the various systems for perfection in the automatic regulation of incandescent machines than they make for the regulation of arc machines, but a call at a large station of one of the leading systems disclosed an attendant turning on and off the resistance to meet the changes on the line. We do not consider such regulation automatic, and it will not be found necessary in the Waterhouse system.

Few incandescent systems start where their competitor has failed, but such is the case with the Waterhouse incandescent system. Our first incandescent machine disclosed such remarkable perfection in automatic regulation, that it was purchased to take the place of a machine of a well-known system that gave unsatisfactory results under the existing conditions. The conditions are, a heated engine room that is never below 90 degrees in winter, and during the past summer months the thermometer has registered 106 degrees. Under these circumstances the machine itself must produce little internal heat, the regulation should be the best. Our dynamo has given entire satisfaction in the heated engine room, even during the excessive hot weather.

If the Waterhouse system will work perfectly under extreme conditions, it will certainly perform like service under ordinary conditions.

In asking for prices of incandescent plants, please send sketch of space to be lighted, with distances to the dynamo marked thereon.

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### ACHIEVEMENT.

We are now running two of our largest dynamos in series at Willimantic, Conn., with arc and incandescent lights on same wire.

Arc lights and incandescent lights are cut out at different times during the evening without danger to the life of the incandescent lamp, owing to a perfect regulator.

When the load has been reduced to the capacity of one machine the other dynamo is automatically cut out, and the single dynamo completes the run.

The current is steady and free from fluctuations, and the advantage of running dynamos in series is in many places desirable, while with all other systems with arc and incandescent on same wire it is impossible to do so.



## WATERHOUSE STANDARD AMMETER.

The want of a reliable Ammeter has been felt by all electricians, and in offering the Waterhouse Standard Ammeter to the public, we fully believe its reliability can be depended upon, and that the objections common to ammeters now on the market have been overcome.

The best electrical measuring instruments in use depend for their action upon a permanent magnet, or, in their construction a coiled spring is used, so that the magnetism of the magnet, or the resiliency of the spring is a varying quantity, and frequent calibration is necessary to correct these variations. The object in producing the Waterhouse Standard Ammeter was to build an instrument on a new principle with the action always the same, so that when once standardized its reliability would be lasting.

The instrument is most sensitive to the variations in the current transmitted through it, and is not only adapted for use in electric light stations but also for the finest laboratory tests. A number of these instruments have been in use for some time, and are giving entire satisfaction.

Fig. 1, shows the ammeter as finished. A volt-meter is also made on same principle, and an ammeter and volt-meter combined.

On the top are the binding posts for circuit wires, and also a small compass for denoting the direction of the current. The front presents a dial with silver indicator, and on the floor is a table on which the calibration of the instrument is recorded. These are enclosed by a glass that is secured in position by a screw and a washer on top.

The principle involved is shown in Fig. 2 and Fig. 3.

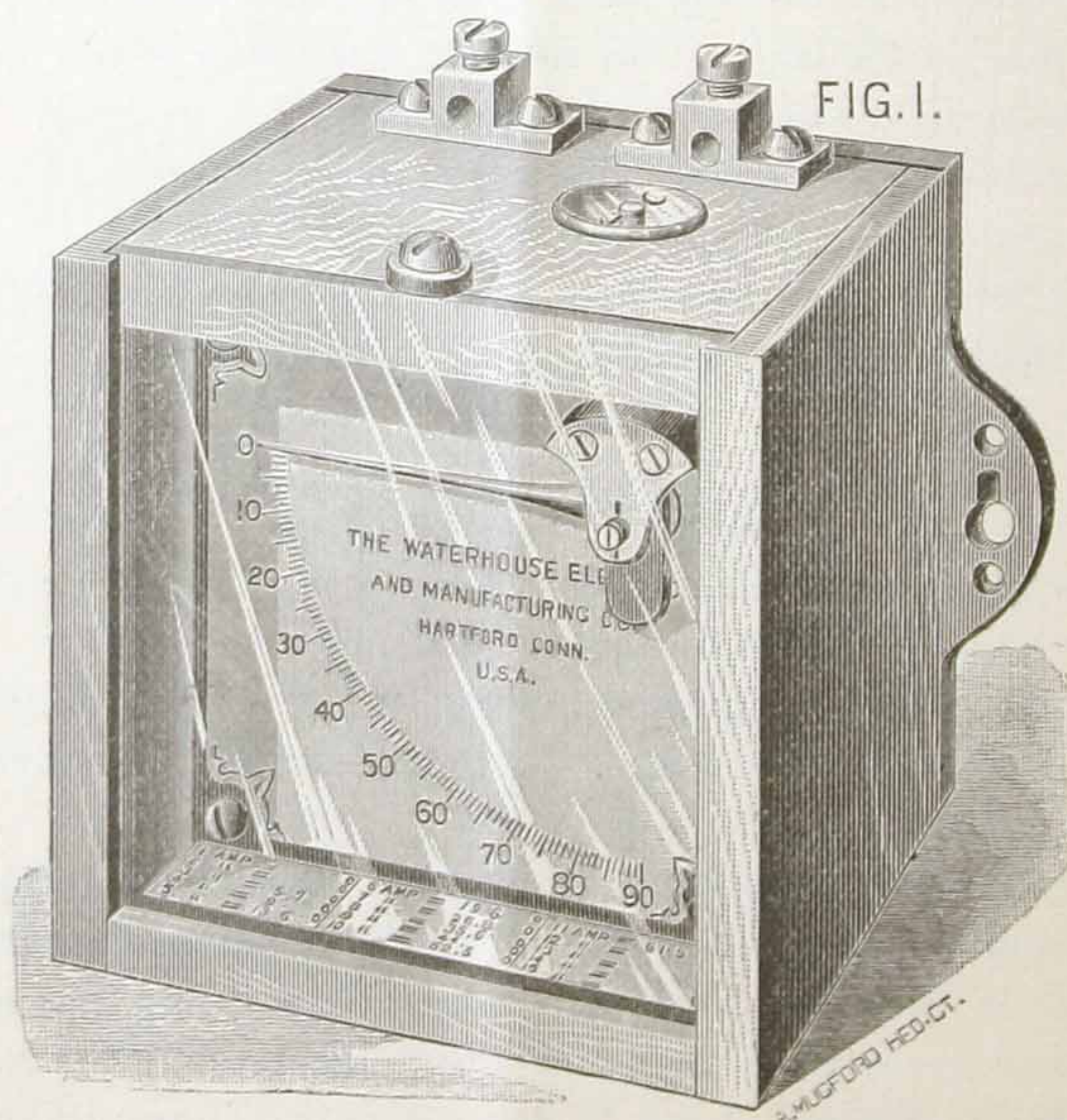
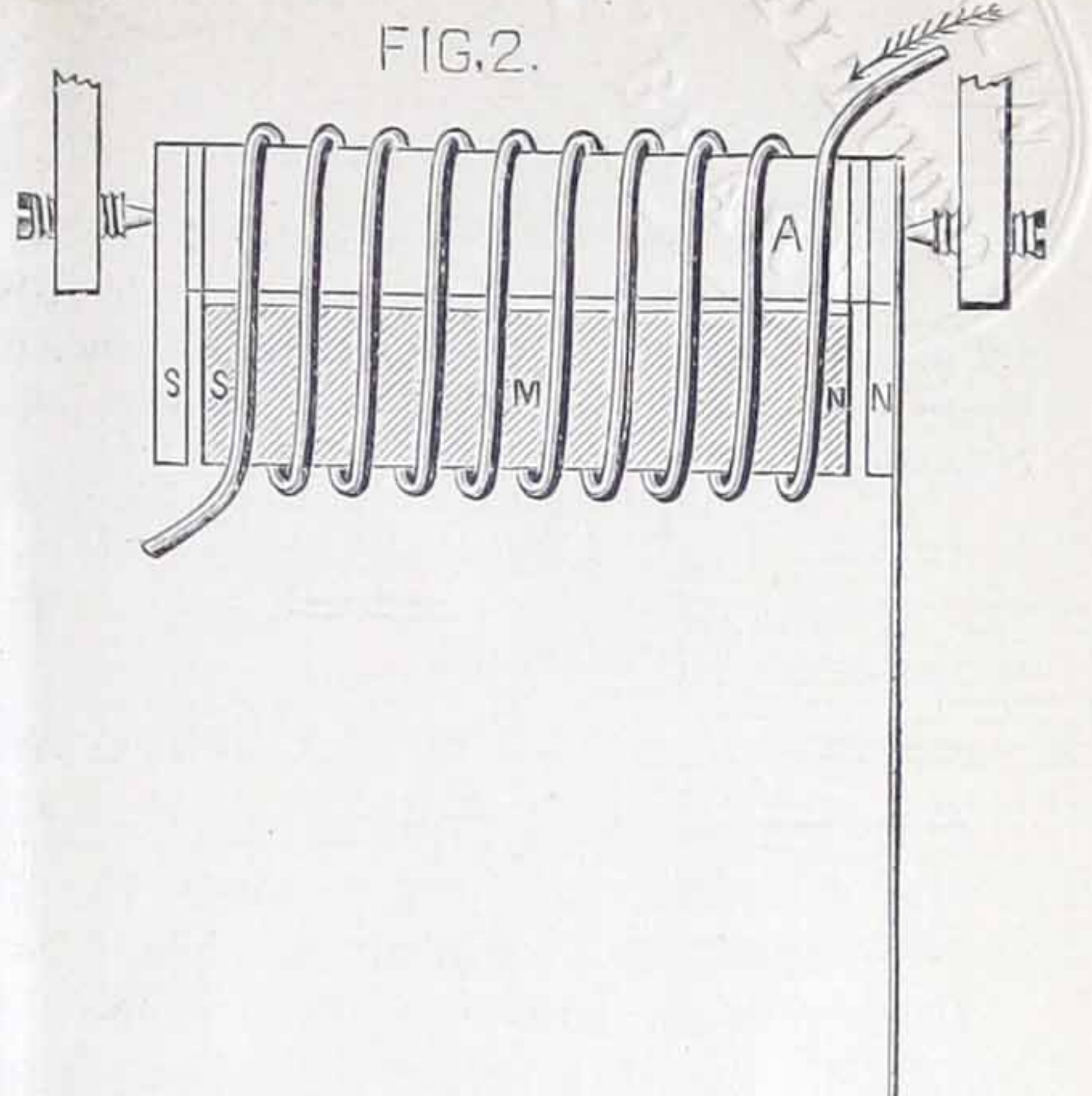
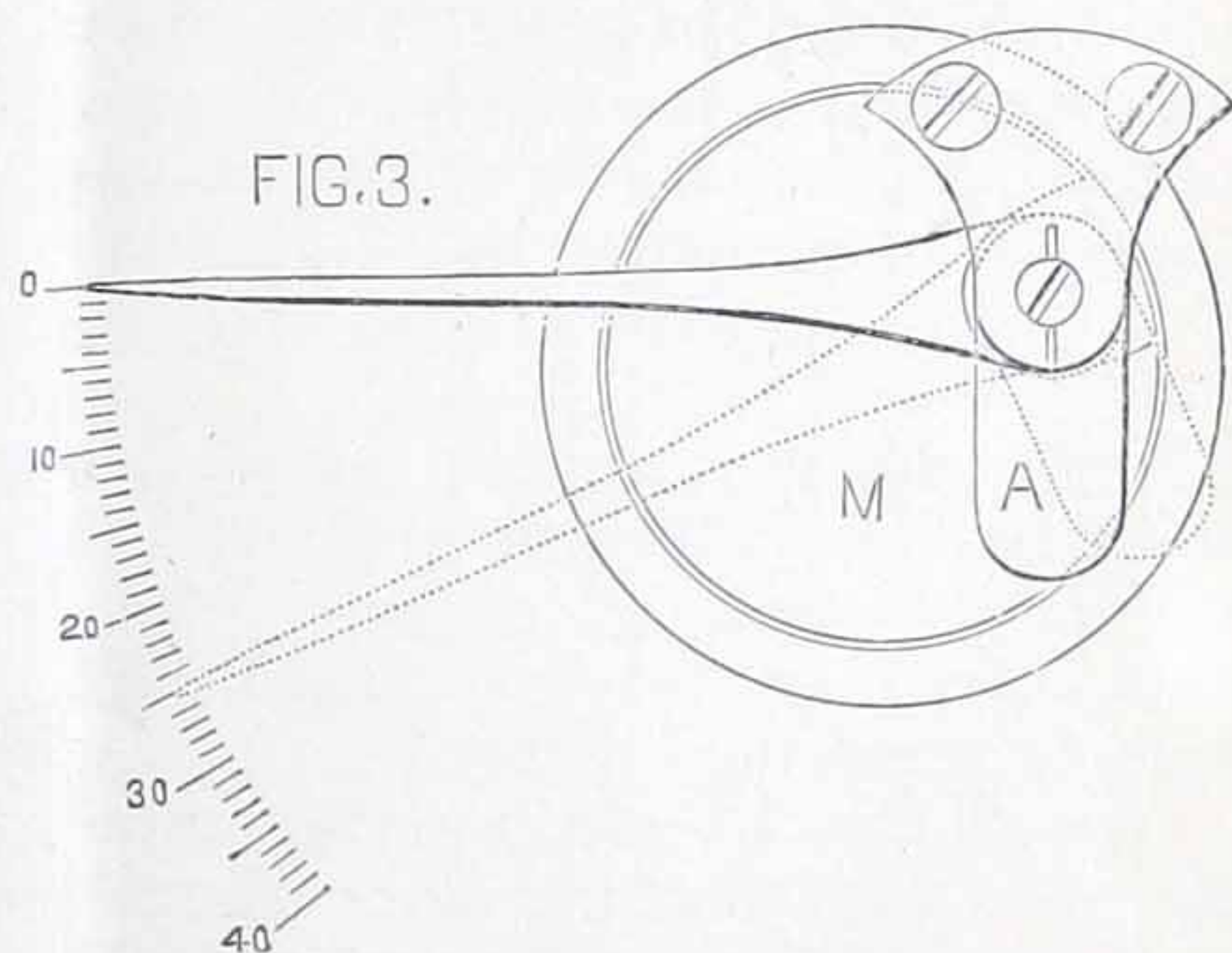




Fig. 2, shows a section of the working parts, consisting of a coiled conductor wound around a stationary soft iron core—M, said core having a longitudinal slot, situated to the left of the median line of the upper edge of the periphery of the core. In this slot is placed a soft iron armature—A, which is provided with iron pendant pole pieces and a silver pointer. The armature—A and its pole pieces and pointer are all one piece and are finely pivoted at each end and free to swing or vibrate, while the core—M is stationary.



The current in the coiled conductor polarizes each end of M and A alike so that the poles attached to A are of the same sign as the same ends of M. The result is, that like poles repel, which causes the pendant parts of A to swing away from the center of core—M, as shown in Fig. 3, carrying the pointer as shown in dotted lines to an angle corresponding to the intensity of the current passing through the conductor to be measured. Use is made of the repelling power of magnetism for the reason that it is prolonged and exerted evenly, while that of attraction would be variable. When the current is cut off gravitation carries the pointer back to O.



The use of the repelling power of magnetism and gravitation for returning the indicator to O, overcomes the necessity for a permanent magnet or a coiled spring.

Physical Laboratories, Electricians, and all Electric Light Stations should have a Waterhouse Standard Ammeter, because of its accuracy and constant reliability.

Buy an improvement on what you have.

Price, accurately Standardized, - - - \$25.00



## MILL LIGHTING.

WEYBOSSET MILLS,  
TAFT, WEEDEN & Co., Agents,  
PROVIDENCE, R. I., Sept. 14, 1887.

THE WATERHOUSE ELECTRIC & MFG. CO.:

*Gentlemen:*—In answer to your inquiry, we have run the Waterhouse Dynamo with arc lamps furnished by you since the first week in August; so far it has met the representation as made to us, and has done very satisfactory work. The light is brilliant and remarkably steady.

Yours truly,

TAFT, WEEDEN & CO., Agents.

## CONCLUSION.

Our light is steady, quiet, clear, and white, producing a daylight effect.

Our machine does not produce the hum on telephone wires that is so objectional from open circuit machines.

Owing to the self-regulating nature of the machine, the damage so often caused by "switch board mistakes" and short circuiting from telephone and telegraph wires is avoided in this system.

Our apparatus, although solid in construction, is lighter than any other and more convenient to handle in shipment, thereby saving freight, where apparatus is wanted in inaccessible places, such as mining claims, where transportation is difficult. It can be divided into parts; the heaviest one piece in our largest machine weighs but 500 pounds.

Our work is mechanical in every particular, the best material only being used.

Our regulator is sure to control; therefore the danger so common in all other systems in burning up the apparatus, when set up and operated by inexperienced men, is avoided. We advise sending an expert from factory with every plant, but in the installation of small plants this may not be considered worth the expense.

We have endeavored to point out the leading features of the Waterhouse System, and believe the indorsements substantiate the claims of superiority.

It is all the result of experience, aided by electrical and mechanical skill—a combination in one person enjoyed by but few electricians. The old systems are passing out of date, and care should be exercised in the selection of a system, as the future profit will depend in many cases in the ability to compete.

If you have a flickering light, and a company starts with such a light as the Waterhouse, your customers will go for the best light, and no argument can stop them.

It requires so little power and space that fully 25 per cent. can be saved on steam plant and building; not only effecting a saving on the original investment, interest, and wear and tear on same, but in the cost of producing light. Our apparatus is constructed in duplicate parts and is so simple that in the event of accident repairs will cost less than that required by other and more complicated systems.

Address,

THE WATERHOUSE ELECTRIC & MFG. CO.,

HARTFORD, CONN.







FRANKLIN  
INSTITUTE  
1884

